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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,395	08/19/2003	Frederik Marcel Van Der Vliet	LT2700	6129

7590 05/02/2008

ATTN: Travis Dodd
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EXAMINER	
WOOD, KEVIN S	

ART UNIT	PAPER NUMBER
2874	

MAIL DATE	DELIVERY MODE
05/02/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/644,395	VLIET ET AL.	
	Examiner	Art Unit	
	Kevin S. Wood	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 January 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-18,20-22 and 35-70* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3-18, 20-22 and 35-70* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This action is responsive to the Amendment filed received on 14 January 2008. Claims 2, 19, 23-34 and 59 have been canceled. New claims 68-70 have been added. Claims 1, 3-18, 20-22 and 35-70 are pending in the application.

Drawings

2. The drawings were received on 14 January 2008. These drawings are accepted by the examiner.

Response to Arguments

3. Applicant's arguments with respect to claims 1, 3-18, 20-22 and 35-67 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 3, 6-8,10-12, 14, 16-18, 20, 35, 36, and 60-67 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 5,586,209 to Matsuura et al.

Referring to claims 1, 10-12, 14, 16, 17, 35, and 60-61, and 64-67, the Hasegawa et al. reference discloses an optical device, comprising: multi-mode waveguides positioned on a base (201), the waveguides including input waveguides transition waveguides, and an output waveguide, the waveguides intersecting one another such that the transition waveguides carry light signals from the input waveguides to the output waveguide and combine the light signals onto the output waveguide, at least a portion of the input waveguides including a contraction taper configured to contract the width of light signal traveling along the input waveguide toward the output waveguide, wherein the contraction tapers do not taper vertically. All of these claimed limitations are shown in Fig. 6 of the reference. Figures 1-4 show the details of the branching devices that are used to form the branching device assembly of Fig. 6. The tapered input waveguides are formed by the tapered waveguides (reference number 10 in Fig. 4) of the branching devices (BR204,BR205,BR206,BR207) of the branching device assembly in Fig. 6. The transition waveguides are formed by the tapered input waveguides are formed by the tapered waveguides (reference number 210 in Fig. 4) of the branching devices (BR202,BR203) of the branching device assembly in Fig. 6. The output waveguide is formed by the tapered input waveguides are formed by the tapered waveguides (reference number 210 in Fig. 4) of the branching devices (BR201) of the branching device assembly in Fig. 6. Figures 1-2F show that the waveguides do not taper vertically. It should be noted that although many

of the Figures of the Matsuura et al. reference show the device acting as a branching device or splitter, the Matsuura et al. reference clearly discloses that the device may also be utilized as a coupler or combiner (See Fig 5 where the device is shown as bi-directional).

The Matsuura et al. reference discloses an optical device, comprising: multi-mode waveguides positioned on a base (201), the waveguides including input waveguides transition waveguides, and an output waveguide, the waveguides intersecting one another such that the transition waveguides carry light signals from the input waveguides to the output waveguide and combine the light signals onto the output waveguide, at least a portion of the input waveguides including a contraction taper configured to contract the width of light signal traveling along the input waveguide toward the output waveguide, wherein the contraction tapers do not taper vertically. All of these claimed limitations are shown in Fig. 6 of the reference. Figures 2A-3 show the details of the branching devices that are used to form the branching device assembly of Fig. 6. The tapered input waveguides are formed by the tapered waveguides (reference number 211 in Fig. 2A) of the branching devices (BR204,BR205,BR206,BR207) of the branching device assembly in Fig. 6. The transition waveguides are formed by the tapered input waveguides are formed by the tapered waveguides (reference number 211 in Fig. 2A) of the branching devices (BR202,BR203) of the branching device assembly in Fig. 6. The output waveguide is formed by the tapered input waveguides are formed by the tapered waveguides (reference number 211 in Fig. 8A) of the branching devices (BR201) of the branching

device assembly in Fig. 6. Figures 2A-2G show that the waveguides have an expansion taper but they do not taper vertically. It should be noted that although many of the Figures of the Matsuura et al. reference show the device acting as a branching device or splitter, the Matsuura et al. reference clearly discloses that the device may also be utilized as a coupler or combiner.

Referring to claim 3, the Matsuura et al. reference clearly discloses that the contraction tapers taper from an expanded end (Fig. 2F) to a contracted end (Fig. 2A) having a width less than 30% of the width of the expanded end.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 4, 5, 9, 13, 15, 21-22, and 37-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,586,209 to Matsuura et al.

Referring to claims 4 and 40, the Matsuura et al. reference discloses all the limitations of the claimed invention, except the Matsuura et al. reference does not appear to specifically disclose the contraction tapers have a contracted end with a width greater than 12 μm. The applicant does not disclose the criticality or an unexpected result from using this range of widths. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a contraction taper having a contracted end with a width greater than 12 μm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Referring to claim 5, the Matsuura et al. reference does not appear to specifically disclose that at least a portion of the contraction tapers having a taper ratio in a range of 8:1 to 200:1, the taper ration being a ratio of the taper length over the taper. The applicant does not disclose the criticality or an unexpected result from using this range of taper ratios. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a taper ratio 8:1 to 200:1, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering

the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Referring to claim 9, the Matsuura et al. reference does not appear to specifically disclose that at least a portion of the expansion tapers having a taper ratio in a range of 8:1 to 200:1, the taper ration being a ratio of the taper length over the taper. The applicant does not disclose the criticality or an unexpected result from using this range of taper ratios. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a taper ratio 8:1 to 200:1, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Referring to claims 15 and 49, the Matsuura et al. reference does not appear to specifically disclose the waveguides having a thickness between 16 μm and 75 μm and a width of 16 μm to 75 μm. The applicant does not appear to have disclosed the criticality of the claimed dimensions. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use waveguides having a thickness and/or width of 16 μm to 75 μm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Referring to claim 21, the Matsuura et al. reference does not appear to specifically disclose that the expansion tapers have a contracted end with a width greater than 10 μm. The applicant does not disclose the criticality or an unexpected

result from using this range of widths. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a expansion tapers having a contracted end with a width greater than 10 μm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Referring to claims 22 and 41, the Matsuura et al. reference does not appear to specifically disclose that at least a portion of the expansion tapers having a taper ratio in a range of 8:1 to 200:1, the taper ration being a ratio of the taper length over the taper. The applicant does not disclose the criticality or an unexpected result from using this range of taper ratios. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a taper ratio 8:1 to 200:1, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Referring to claim 13, 37-39, 42, 43, 45-48, 50-55 and 58, the Matsuura et al. reference discloses all the limitations of the claimed invention, except the reference does not appear to specifically disclose that one or more of the waveguides has an end facet that is angled at less than ninety degrees relative to the propagation of a light signal. The angling of an end facet of an optical waveguide is well known within the optical communications art. It is often done to minimize the unwanted reflection losses. It would have been obvious to one having ordinary skill in the art at the time the

invention was made to utilize an angled end facet for one or more of the optical waveguides for the purpose of minimizing the unwanted reflection losses.

Referring to claim 44 and 57, the Matsuura et al. reference does not appear to specifically disclose that at least a portion of the expansion tapers having a taper ratio in a range of 8:1 to 200:1, the taper ration being a ratio of the taper length over the taper. The applicant does not disclose the criticality or an unexpected result from using this range of taper ratios. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a taper ratio 8:1 to 200:1, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Referring to claim 56, the Matsuura et al. reference does not appear to specifically disclose that the expansion tapers have a contracted end with a width greater than 10 μm. The applicant does not disclose the criticality or an unexpected result from using this range of widths. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a expansion tapers having a contracted end with a width greater than 10 μm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin S. Wood whose telephone number is (571) 272-2364.

The examiner can normally be reached on Monday-Thursday (7am - 5:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney B. Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/KSW/

/Kevin S Wood/
Primary Examiner, Art Unit 2874